

**Notice of Allowability**

Application No.

10/060,398

Examiner

Chanh Nguyen

Applicant(s)

INOUE, TAKAO

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**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment after final filed on 02/14/05 and authorized examiner's amendment.
2. ☒ The allowed claim(s) is/are 1,2,6,7 and 10-26.
3. ☒ The drawings filed on 01 February 2002 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☒ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☒ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_.

  
CHANH NGUYEN  
PRIMARY EXAMINER

### EXAMINER'S AMENDMENT

1. An extension of time under 37 CFR 1.136(a) is required in order to make an examiner's amendment which places this application in condition for allowance. During a telephone conversation conducted on March 28, 2005 and the letter confirm on April 15, 2005, with Frederick E. Cooperrider requested an extension of time for 2 MONTH(S) and authorized the Director to charge Deposit Account No. 50-0481 the required fee of \$450.00 for this extension and authorized the following examiner's amendment. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

The application has been amended as follows:

6. (Currently amended) A light emitting diode driving circuit comprising:

a luminance controller that approximates the luminance change characteristics of a light emitting diode with the luminance change characteristics of a lamp, wherein said luminance controller further comprises:

a pulse width adjuster that adjusts a pulse time width of a pulse signal from an illuminance controller to generate an adjusted pulse signal;

a pulse amplitude stabilizer that stabilizes an amplitude of a pulse signal from the illuminance controller to provide a stabilized pulse control signal to said pulse width adjuster;

a smoothing circuit that smooths the adjusted pulse signal to generate a smoothed pulse signal;

a current interrupter that interrupts a supply of current to the light emitting diode in response to the adjusted pulse signal;

a control voltage switch that selects one of the smoothed pulse signal from the smoothing circuit and a minimum voltage from a minimum voltage generator; and

a constant voltage driver that provides the supply of current to the light emitting diode in proportion to the selected signal from the control voltage switch.

8-9. (Canceled)

10. (Current amended) The circuit of claim 8 6, wherein said luminance controller further comprises:

a pulse amplitude stabilizer that stabilizes the amplitude of a pulse signal from the illuminance controller to provide a stabilized pulse control signal to said pulse width adjuster;

a current interrupter that interrupts a supply of current to the light emitting diode in response to the adjusted pulse signal;

a control voltage switch that selects one of the adjusted pulse signal and a minimum voltage from a minimum voltage generator,

a smoothing circuit that smooths the selected signal to generate a smoothed signal; and

a constant voltage driver that provides the supply of current to the light emitting diode in proportion to the smoothed signal.

11 . (Current amended) The circuit of claim 8 6, wherein said luminance controller comprises a pulse amplitude stabilizer that stabilizes the amplitude of the pulse signal from the illuminance controller and wherein said pulse width adjuster adjusts the amplitude stabilized pulse signal from the pulse amplitude stabilizer.

2. The following is an examiner's statement of reasons for allowance:

Kato (U.S. Patent No. 6,075,2330 is the closest reference to teach a control pulse signal generator, smoothing circuit and a driving circuit as recited in claim 1. However, Kato does not teach a variable duty factor adjusted in dependence on characteristic of the light emitting diode in combination with a smooth circuit and driving circuit. The limitation "characteristic" is interpreted broadest in light of the specification (i.e. similar to those conventional lamp). Kato's light emitting diode (21) does not have characteristic similar to the conventional lamp nor a distinctive character in term of dictionary.

Delay (U.S. Patent No. 3,787,752) is also cited to teach a control pulse signal generator, smoothing circuit and a driving circuit as recited in claim 1, but the smooth circuit (R3) of Delay provided before a control pulse signal generator (T1, R2). Thus,

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smooth circuit (R3) of Delay does not smooth the control pulse signal as recited in claim 1.

Vollrath (U.S. Patent No. 6,858,994 B2) is cited similar to Delay. The smooth circuit (36) smooths signals before pulse width modulation.

Senoo et al al (U.S. Patent No. 4,358,713), Hayashi (U.S. Patent No. 5,097,145) and Takei et al (U.S. Patent No. 5,426,446) are cited to teach interrupter, but does not interrupt a supply of current to the light emitting diode in response to the adjusted pulse signal as recited in claim 6.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

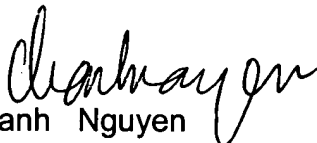
### ***Inquiries***


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chanh Nguyen whose telephone number is (571) 272-7772. The examiner can normally be reached on Monday- Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on (571) 272-3638. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Chanh Nguyen  
Primary Examiner  
Art Unit 2675

  
C. Nguyen  
April 29, 2005